WHAT IS CLAIMED IS:

1. A photoelectric conversion device comprising:

a photoelectric conversion layer of a first conductivity type, the photoelectric conversion layer being stacked on a semiconductor substrate;

an element dividing region of a second conductivity type, the element dividing region being formed in the photoelectric conversion layer, the element dividing region dividing the photoelectric conversion layer into a first photoelectric conversion region, a second photoelectric conversion region, and a third photoelectric conversion region along the semiconductor substrate;

a first dividing region of the second conductivity type, the first dividing region being formed at a predetermined depth from a surface of the photoelectric conversion layer in the first photoelectric conversion region, the first dividing region dividing the first photoelectric conversion region into a first surface side region closer to the surface thereof and a first substrate side region closer to the semiconductor substrate, the first dividing region having a through hole through which the first surface side region and the first substrate side region communicate with each other;

a second dividing region of the second conductivity type, the second dividing region being formed at substantially the same depth as the first dividing region or at a shallower depth

than the first dividing region in the second photoelectric conversion region, the second dividing region dividing the second photoelectric conversion region into a second surface side region closer to the surface thereof and a second substrate side region closer to the semiconductor substrate; and

a third dividing region of the second conductivity type, the third dividing region being formed at a shallower depth than the second dividing region in the third photoelectric conversion region, the third dividing region dividing the third photoelectric conversion region into a third surface side region closer to the surface thereof and a third substrate side region closer to the semiconductor substrate.

2. A photoelectric conversion device comprising:

a photoelectric conversion layer of a first conductivity type, the photoelectric conversion layer being stacked on a semiconductor substrate; and

a dividing region of a second conductivity type, the dividing region being formed at a predetermined depth from a surface of the photoelectric conversion layer, the dividing region dividing the photoelectric conversion layer into a surface side region closer to the surface thereof and a substrate side region closer to the semiconductor substrate, the dividing region having a through hole through which the surface side region and the substrate side region communicate with each other.

3. An image sensor comprising:

a photoelectric conversion device; and

a drive circuit that drives the photoelectric conversion device;

the photoelectric conversion device comprising:

a photoelectric conversion layer of a first conductivity type, the photoelectric conversion layer being stacked on a semiconductor substrate;

an element dividing region of a second conductivity type, the element dividing region being formed in the photoelectric conversion layer, the element dividing region dividing the photoelectric conversion layer into a first photoelectric conversion region, a second photoelectric conversion region, and a third photoelectric conversion region along the semiconductor substrate;

a first dividing region of the second conductivity type, the first dividing region being formed at a predetermined depth from a surface of the photoelectric conversion layer in the first photoelectric conversion region, the first dividing region dividing the first photoelectric conversion region into a first surface side region closer to the surface thereof and a first substrate side region closer to the semiconductor substrate, the first dividing region having a through hole through which the first surface side region and the first substrate side region communicate with each other;

a second dividing region of the second conductivity type,

the second dividing region being formed at substantially the same depth as the first dividing region or at a shallower depth than the first dividing region in the second photoelectric conversion region, the second dividing region dividing the second photoelectric conversion region into a second surface side region closer to the surface thereof and a second substrate side region closer to the semiconductor substrate; and

a third dividing region of the second conductivity type, the third dividing region being formed at a shallower depth than the second dividing region in the third photoelectric conversion region, the third dividing region dividing the third photoelectric conversion region into a third surface side region closer to the surface thereof and a third substrate side region closer to the semiconductor substrate.

4. An image sensor comprising:

a photoelectric conversion device; and

a drive circuit that drives the photoelectric conversion device;

the photoelectric conversion device comprising:

a photoelectric conversion layer of a first conductivity type, the photoelectric conversion layer being stacked on a semiconductor substrate; and

a dividing region of a second conductivity type, the dividing region being formed at a predetermined depth from a surface of the photoelectric conversion layer, the dividing

region dividing the photoelectric conversion layer into a surface side region closer to the surface thereof and a substrate side region closer to the semiconductor substrate, the dividing region having a through hole through which the surface side region and the substrate side region communicate with each other.

5. A method for manufacturing a photoelectric conversion device comprising:

a stacking step of stacking a first conductivity type photoelectric conversion layer on a semiconductor substrate;

an element division step of forming an element dividing region of a second conductivity type in the photoelectric conversion layer, the element dividing region dividing the photoelectric conversion layer into a first photoelectric conversion region, a second photoelectric conversion region, and a third photoelectric conversion region along the semiconductor substrate;

a step of forming a first dividing region of the second conductivity type at a predetermined depth from a surface of the photoelectric conversion layer in the first photoelectric conversion region, the first dividing region dividing the first photoelectric conversion region into a first surface side region closer to the surface thereof and a first substrate side region closer to the semiconductor substrate, the first dividing region having a through hole through which the first surface side region and the first substrate side region communicate with each other,

and further forming a second dividing region of the second conductivity type at substantially the same depth as the first dividing region in the second photoelectric conversion region, the second dividing region dividing the second photoelectric conversion region into a second surface side region closer to the surface thereof and a second substrate side region closer to the semiconductor substrate; and

a step of forming a third dividing region of the second conductivity type at a shallower depth than the second dividing region in the third photoelectric conversion region, the third dividing region dividing the third photoelectric conversion region into a third surface side region closer to the surface thereof and a third substrate side region closer to the semiconductor substrate.

6. A method of Claim 5, wherein the step of forming the first dividing region and the second dividing region includes a step of injecting second conductivity type impurities from the surface of the photoelectric conversion layer with predetermined injecting energy, and the step of forming the third dividing region includes a step of injecting the second conductivity type impurities from the surface of the photoelectric conversion layer with smaller injecting energy than the predetermined injecting energy.

7. A method for manufacturing a photoelectric conversion device comprising:

a stacking step of stacking a first conductivity type photoelectric conversion layer on a semiconductor substrate;

an element division step of forming an element dividing region of a second conductivity type in the photoelectric conversion layer, the element dividing region dividing the photoelectric conversion layer into a first photoelectric conversion region, a second photoelectric conversion region, and a third photoelectric conversion region along the semiconductor substrate;

a step of forming a first dividing region of the second conductivity type at a predetermined depth from a surface of the photoelectric conversion layer in the first photoelectric conversion region, the first dividing region dividing the first photoelectric conversion region into a first surface side region closer to the surface thereof and a first substrate side region closer to the semiconductor substrate, the first dividing region having a through hole through which the first surface side region and the first substrate side region communicate with each other;

a step of forming a second dividing region of the second conductivity type at a shallower depth than the first dividing region in the second photoelectric conversion region, the second dividing region dividing the second photoelectric conversion region into a second surface side region closer to the surface thereof and a second substrate side region closer to the semiconductor substrate; and

a step of forming a third dividing region of the second conductivity type at a shallower depth than the second dividing region in the third photoelectric conversion region, the third dividing region dividing the third photoelectric conversion region into a third surface side region closer to the surface thereof and a third substrate side region closer to the semiconductor substrate.

8. A method of Claim 7, wherein the step of forming the first dividing region includes a step of injecting second conductivity type impurities from the surface of the photoelectric conversion layer with predetermined first injecting energy; the step of forming the second dividing region includes a step of injecting second conductivity type impurities from the surface of the photoelectric conversion layer with second injecting energy smaller than the first injecting energy; and the step of forming the third dividing region includes a step of injecting second conductivity type impurities from the surface of the photoelectric conversion layer with third injecting energy smaller than the second injecting energy.